

# INTERNATIONAL SEARCH REPORT

Intern Application No

PCT/EP 03/50792

## A. CLASSIFICATION OF SUBJECT MATTER

IPC 7 E21B33/138 E21B43/16 E21B43/25 E21B43/26

According to International Patent Classification (IPC) or to both national classification and IPC

## B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC 7 E21B C04B

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

EPO-Internal, WPI Data

## C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 5 291 949 A (DOVAN HOAI T ET AL) 8 March 1994 (1994-03-08) cited in the application	1,8
Y	column 10, line 7-28 ---	6,11
X	US 4 147 211 A (SANDIFORD BURTON B) 3 April 1979 (1979-04-03) column 7, line 28-56; figure 1 column 11, line 29 -column 12, line 3 ---	1-5,7-10
X	US 4 903 767 A (SHU PAUL ET AL) 27 February 1990 (1990-02-27) column 1, line 23 -column 2, line 10 column 4, line 44-49; claims 1-33 ---	1-3,7,8
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Further documents are listed in the continuation of box C.



Patent family members are listed in annex.

### \* Special categories of cited documents :

\*A\* document defining the general state of the art which is not considered to be of particular relevance

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\*P\* document published prior to the international filing date but later than the priority date claimed

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\*X\* document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

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\*&\* document member of the same patent family

Date of the actual completion of the international search

11 March 2004

Date of mailing of the international search report

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C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT		
Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	US 2 042 011 A (LOOMIS ALBERT G) 26 May 1936 (1936-05-26) page 1, column 2, line 11-38 page 2, column 1, line 28-49 ---	6,11
A	US 3 958 638 A (JOHNSTON CHESTER C) 25 May 1976 (1976-05-25) column 2, line 13-25 column 4, line 27-53 ---	4-6,9-11
A	US 3 349 844 A (MORSE JOE V ET AL) 31 October 1967 (1967-10-31) figures 1-4 ---	1,2,6,7
A	US 4 004 639 A (SANDIFORD BURTON B) 25 January 1977 (1977-01-25) column 4, line 21-24 column 4, line 27 -column 10-25 ---	1-4,6-9
A	US 3 658 131 A (BILES JERRY W) 25 April 1972 (1972-04-25) column 1, line 12-32 column 2, line 15-38 column 3, line 3-10 column 3, line 29-36 column 3, line 36,37 column 3, line 41 -column 4, line 50 ---	1-4,6-9
A	US 3 881 552 A (HESSERT JAMES E) 6 May 1975 (1975-05-06) abstract ---	1-10
A	US 4 299 284 A (BROWN ALFRED ET AL) 10 November 1981 (1981-11-10) column 9, line 48 -column 10, line 29 ---	1
A	US 5 513 705 A (DJABBARAH NIZAR F ET AL) 7 May 1996 (1996-05-07) abstract ---	1
A	US 6 228 812 B1 (KESAVAN SUBRAMANIAN ET AL) 8 May 2001 (2001-05-08) column 14, line 45 -column 15, line 11 ---	1
A	US 4 031 958 A (SANDIFORD BURTON B ET AL) 28 June 1977 (1977-06-28) the whole document ---	1,6
A	FR 2 671 132 A (INST FRANCAIS DU PETROL) 3 July 1992 (1992-07-03) figures 1-3,6 ---	1,6
A	US 4 438 976 A (BAUGHMAN DAVID R ET AL) 27 March 1984 (1984-03-27) column 5, line 67 -column 6, line 13 ---	1
	--- -/--	

## INTERNATIONAL SEARCH REPORT

 Publication No  
 PCT/EP 03/50792

## C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	US 5 181 568 A (MCKOWN KENNETH W ET AL) 26 January 1993 (1993-01-26) claims 8,13 ---	3,8
A	US 6 024 167 A (IRANI CYRUS A) 15 February 2000 (2000-02-15) abstract ---	2
A	US 5 358 565 A (SHU PAUL) 25 October 1994 (1994-10-25) column 5, line 41-53 column 6, line 26-30 ---	4,8
A	US 4 940 091 A (SHU PAUL ET AL) 10 July 1990 (1990-07-10) abstract ---	1
A	US 5 834 406 A (SYDANSK ROBERT D) 10 November 1998 (1998-11-10) abstract ---	1
A	US 5 363 914 A (TELETZKE GARY F) 15 November 1994 (1994-11-15) abstract ---	1
A	US 4 981 176 A (HURD BILLY G) 1 January 1991 (1991-01-01) abstract ---	1
A	SCHLUMBERGER GLOSSARY, 'Online! XP002273221 Retrieved from the Internet: <URL:http://www.glossary.oilfield.slb.com/ Display.cfm?Term=alkaline%20floodinghttp:// www.glossary.oilfield.slb.com/Display.cfm ?Term=alkaline%20flooding> 'retrieved on 2004-03-11! page 1 ---	1
A	SCHLUMBERGER GLOSSARY, 'Online! XP002273222 Retrieved from the Internet: <URL:http://www.glossary.oilfield.slb.com/ Display.cfm?Term=waterfloodhttp://www.glos sary.oilfield.slb.com/Display.cfm?Term=wat erflood> 'retrieved on 2004-03-11! page 1 -----	1

# INTERNATIONAL SEARCH REPORT

International Application No  
PCT/EP 03/50792

Patent document cited in search report		Publication date	Patent family member(s)	Publication date
US 5291949	A	08-03-1994	US 5111886 A US 5211858 A US 5263540 A US 5244042 A US 5226480 A US 5207934 A	12-05-1992 18-05-1993 23-11-1993 14-09-1993 13-07-1993 04-05-1993
US 4147211	A	03-04-1979	NONE	
US 4903767	A	27-02-1990	NONE	
US 2042011	A	26-05-1936	NONE	
US 3958638	A	25-05-1976	NONE	
US 3349844	A	31-10-1967	NONE	
US 4004639	A	25-01-1977	CA 1056299 A1	12-06-1979
US 3658131	A	25-04-1972	NONE	
US 3881552	A	06-05-1975	NONE	
US 4299284	A	10-11-1981	NONE	
US 5513705	A	07-05-1996	WO 9635858 A1 US 5542474 A	14-11-1996 06-08-1996
US 6228812	B1	08-05-2001	GB 2382095 A ,B GB 2345306 A ,B NO 996034 A	21-05-2003 05-07-2000 13-06-2000
US 4031958	A	28-06-1977	NONE	
FR 2671132	A	03-07-1992	FR 2671132 A1 CA 2076641 A1 DE 69112044 D1 DE 69112044 T2 EP 0517892 A1 WO 9212325 A1 NO 923366 A	03-07-1992 29-06-1992 14-09-1995 11-01-1996 16-12-1992 23-07-1992 27-10-1992
US 4438976	A	27-03-1984	NONE	
US 5181568	A	26-01-1993	NONE	
US 6024167	A	15-02-2000	NONE	
US 5358565	A	25-10-1994	US 5103907 A US 5257664 A CA 2056856 A1	14-04-1992 02-11-1993 04-06-1992
US 4940091	A	10-07-1990	CA 2005853 A1 US 5022466 A	03-07-1990 11-06-1991
US 5834406	A	10-11-1998	US 6103772 A	15-08-2000
US 5363914	A	15-11-1994	CA 2119614 A1	26-09-1994

# INTERNATIONAL SEARCH REPORT

International Application No

PCT/EP 03/50792

Patent document cited in search report		Publication date		Patent family member(s)	Publication date
US 4981176	A	01-01-1991	CA	2028509 A1	27-04-1991
			GB	2237309 A	01-05-1991
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